The purpose of an IPS is to protect vulnerable patients in Group 2 medical locations from the risks associated with electrical leakage currents.

**Medical Locations**
Medical locations are designated into Group 0, Group 1 or Group 2 in the International Standard IEC 60364-7-710 and the Institution of Electrical Engineers (IEE) Wiring Regulation Guidance Note 7, Chapter 10. Group 2 locations include operating theatres, intensive care units, special care baby units and recovery rooms.

**Monitoring**
In an IPS unit the outgoing electrical circuits supplying critical care and life support equipment are constantly monitored for short circuits or earth leakage faults. Any fault will result in an audio and visual alarm being raised so that remedial action can be taken by the Maintenance Technicians before unexpected loss of electrical power occurs.

**Sizes**
IPS units can be supplied in 3.15, 4, 5, 6.3, 8 and 10 kVA sizes and these can be single (SIPS), double (DIPS), triple (TIPS) or quadruple (QIPS) in one enclosure.

**Automatic Electrical Supply**
It is also a requirement of the standards that Group 2 Medical Locations shall have an automatic electrical supply available within 0.15 seconds in the event of power failure. Consequently it is usual for an IPS unit to be backed-up by an on-line UPS (uninterruptible power supply) as this will provide a ‘no-break’ supply source.
Wiring Example

Typical IT System With Insulation Monitoring
Operating Theatre suite

- Insulation Monitor
- Load Current Transformer
- Mains Supply
- Temperature Sensor
- Protective Earth Bar
- Equipotential Reference Earth Bonding Bar
- Taps & Pipes
- Remote Alarm Panel
- Operating Lamp
- Medical Gas Pendant
- Operating Table
- Antistatic Grid